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NOTICE TO GAS CONSUMERS,

AND

REPORT OF DR. HAYES,

UPON THE BOSTON GAS.

BOSTON:
WRIGHT & HASTY, PRINTERS,
NO. 3 WATER STREET.
1854.

NOTICE TO GAS CONSUMERS.

The Office of the Company, No. 102 Washington Street, is open day and night, where immediate notice is desired, of any deficiency or irregularity in the supply of Gas, of leakage in the streets or buildings, of jumping of lights, or other causes of complaint, and suitable persons will give the earliest attention practicable, to the removal of the difficulty.

Gas Picks and Saws, for cleaning burners, will be furnished gratuitously to consumers, upon application at the Office.

Persons removing from the city for a temporary absence, are recommended to send notice of the fact to the Office, in order that the Gas may be shut off.

Whenever any change of tenancy takes place, it is necessary for the person removing, to give notice at the Office, or he will be held responsible for the Gas consumed on the premises, until such notice is given.

CHARLES C. SMITH,

Clerk of Boston Gas Light Co.

Boston, December 1, 1854.

REPORT UPON THE BOSTON GAS.

To the President and Directors of the Boston Gas Light Company:

Gentlemen,—A note has been received from Wm. W. Greenough, Esq., Agent of your Company, requesting me to report to you on the following points, bearing a relation to the quality of gas manufactured at, and distributed from your works.

I most cheerfully comply with this request, and give you, in the form of replies to the questions proposed, some of the facts experimentally determined during the past two years.

1st. " On the value, purity and illuminating power of the Boston Gas."

The value of purified gas depends on its illuminating power, determined by the light which a given volume will afford, as compared at the moment with that from some well known source. By common consent, the standard adopted, is a spermaceti candle consuming 120 grs. per hour; and with such a standard, the volume of five cubic feet of gas consumed in one hour from an argand burner, is compared by photometric instruments. In the language of the gas engineers, five cubic feet of a gas affording the same light as thirteen sperm candles burning 120x13=1560 grs. of sperm per hour, is called *thirteen candle gas.*

By the term "purity" is understood entire freedom from carbonic acid gas, sulphydric acid gas, ammonia, vapors of sulphuretted compounds, and water.

A pure illuminating gas consists of a mixture containing carburetted hydrogen, carbonic oxide, hydrogen and nitrogen, olefiant gas, and vapors of benzole and naptha.

The addition of the gases before named, either diminishes the value of an illuminating gas by increasing the volume, or as in the case of carbonic acid gas, it reduces the illuminating power in the act of combustion.

Referring to my records, I find the value of Boston gas averaged, from daily observations for the year 1853, was 21 54-100 candles, and for eleven months of the present year, 19 84-100 candles. The average, as shown for eleven months, was reduced, in consequence of the supply of English coal during the first quarter being insufficient, from sea losses and failures on contracts.

Its purity has, throughout, been nearly perfect, so far as the usual impurities are referred to; an occasional occurrence of them only has been found, and then the cause could be traced easily. During a part of the unusually warm autumn of 1854, the high temperature of the pipes *within the earth*, and that of the air and Cochituate water, has prevented the cooling of the gas, and the consequent condensation of vapors of benzole, naptha, and water, to the usual extent. Additional means having been secured, the gas has of late, been more effectually cooled, and the mains and secondary pipes have been found to be clean.

2d. "Its value in comparison with other gases on record."

The experiments made almost daily, have shown a mean value, during the present quarter, of 22 80-100 candles.

Nearly the whole of the gas supplied to the city of London, as appears from the records published monthly, has the value of 13 to 13 8-10 candles, while the cannel gas of Liverpool has been 22 candles. I have not obtained the numbers denoting the value of the New York gas, but from frequent intercourse with the gentlemen testing the gas there, I conclude that they have adopted the same standard as that chosen for Boston gas, viz: about 20 candles.

3d. "Are the burners in general use, suited to the character of the gas?"

Recent experiments, carefully conducted, seem to indicate, that the common burners heretofore used in this country and in Europe, are not adapted to produce the most economical light, from gas so rich as that supplied from your works. The advantage arising from the use of the French burner, with wide openings, has been fully proved in presence of distinguished scientific, as well as skillful practical men, and the subject, in their hands, is likely to lead to improved applications.

4th. "Is there any process, chemical or practical, in use here or elsewhere, familiar to you, whereby Boston gas can be improved?"

I deem the present arrangements made at your works, the most efficient which have been described, or are known to me. So far as they have lately been brought into use, the results obtained have been of the most satisfactory character. They embrace the best parts of the improvements made abroad and at home, and will tend to obviate the evil everywhere felt, of a high natural temperament not under control in the condensation of gas.

5th. "Are there any suggestions which should be made to consumers, upon the proper and economical use of gas?"

It has long been the custom in London, to issue to consumers of gas, from time to time, little tracts on the subjects of gas distribution, measurement, and *care of fixtures;* this last is of eminent importance. A compilation of this kind, has been examined by myself, and it will probably soon be published here. As the duty of the manufacturer of gas to the consumer ceases when he has delivered, within the metre, a pure gas of high illuminating quality, under a regulated pressure, attention is required of the consumer, if he would enjoy the comfort and advantage of a good light. Illuminating gas is not a permanent body, and it cannot, like air, enter and leave small tubes without soiling them, especially if it reposes in them when air has access. But I am happy to observe, that volatile particles of oily vapors, which are always carried forward by gas at a high temperature, and which are supposed to produce "coal tar," are now stopped by the efficient system lately adopted. Gas has a constant tendency to produce fluid, and even solid bitumens, by oxidation from admixture with air, and in the open space between the key of the stop-cock and the burner,—except while the gas is burning,—*air is always present.*

Hence all fixtures require *periodical cleaning*, as every species of apparatus or machinery does, and burners of every form should be cleansed, by using the instruments gratuitously supplied by your company.

The most common causes of annoyance to consumers are, the allowing of gas to remain in the distribution pipes during the summer, or when the burners are not in use, and the displacements or imperfect laying of the pipes within the buildings, allowing them to contain fluids. Not only are the pipes liable to become coated by changes in the included gas, but as it acts on and solidifies all lubricating substances hitherto used, the keys of stop-cocks become fixed, and small openings stopped. Gas of high value, contains six per cent. of its volume in vapor, which can become fluid in the pipes, when they are exposed to the temperature of freezing water. This effect is partial at higher temperatures, and can be observed after any considerable change from warm to cold weather. Hence depressions in the pipes soon collect fluids, and unless the pipes decline *towards* instead of *from* the metre, the flow of gas to the burner is irregular.

As the facts forming part of these replies, might be supposed to rest on individual authority, I will add, that the experiments have often been made before the most distinguished scientific men of our country, and in more than one instance, submitted to the consideration and criticism of those from abroad, with the expression of their entire approval.

It is hardly necessary that I should allude to the quality of the coals used in producing gas of the high value given by the experiments, *as impure coal does not produce such gas.* Yet it should be known that, apart from the manufacture, experiments have been made on every variety of coal which could be obtained, and from the best and purest varieties, the stock for consumption has been made up.

With high respect,
A. A. HAYES, M. D.,
Assayer to State of Massachusetts.

16 Boylston Street, Nov. 25, 1854.

NOTE.

In the brief statement of the high value of the Boston Gas as above given, I did not introduce the results obtained by partial analyses of the gas weekly, in which the Olefiant gas and vapor of Benzole, are estimated. These substances are the luminous constituents of the gas, giving density and color to the flame, causing objects seen by its light, to be as little changed in color and shadow, as they are when viewed by the light from wax, or sperm. They are not present in quantity in those "white" gases made from rosin,or in the flame of turpentine; which, however, brilliant to the eye, have not the higher requisites, of the products of a systematic manufacture. The volume of these important constituents is therefore another measure of value, and the average of this is, for the year, equal to ten per cent. The yearly average for London gas, determined by the same method, does not exceed four per cent. A. A. H.

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REPORTS

OF THE

MAJORITY AND MINORITY OF THE COMMITTEE ON PAVING,

ON THE

SHAWMUT GAS LIGHT COMPANY,

AND THE

REMONSTRANCES AGAINST THE SAME, MADE TO THE BOARD OF
ALDERMEN, MONDAY, MAY 21, 1860, BEING CITY
DOCUMENTS, NOS. 41 AND 42.

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